specification, as shown above, to delete the word "nearly."

Claim 1 is rejected under 35 U.S.C. §112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, the word "nearly" is indefinite. In response, Applicants have amended claim 1, as shown above, to replace the phrase containing "nearly" with a clearer claim limitation.

Claims 1 is rejected under 35 U.S.C. §103(a) as unpatentable over Applicants' Admitted Prior Art (AAPA) in view of Fuji et al. (U.S. Patent No. 5,476,811 – hereafter Fuji). This rejection is respectfully traversed at least for the reasons provided below.

As acknowledged by the Examiner, in AAPA, Fig. 17 of the present specification fails to disclose a grade composition layer interposed between the active layer 904 and the base layer 903. The Examiner, however, asserts that Fujii as teaches the use of a graded composition layer 46 abutting an active layer 48 such that the composition of the graded composition layer is nearly equal to the composition of the active layer at the interface with the active layer and to a composition of a doped semiconductor of a second conductivity type 44 abutting the graded composition layer at the interface of the doped semiconductor layer abutting the graded composition layer. Hence, it would be obvious to combine the teaching of Fuji with AAPA.

Applicants respectfully submit that Fujii teaches, specifically in Figs. 3 and 4, graded composition layers 46,50 having general formula of $Al_xGa_{1-x}As$. Moreover, according to Fig. 3, the graded composition layers 46,50 are interposed between graded semiconductor layers 44 and 52, having a composition of $Al_{0.3}Ga_{0.7}As$, and an active layer 48 having a composition of GaAs.

Further, according to Fig. 4 of Fujii, the composition of the grade composition layer 46 is the same as the composition. $Al_{0.3}Ga_{0.7}As$ of the semiconductor layer 44 at an interface with the semiconductor layer 44. In view of this, Fujii appears to disclose the feature "the composition of the grade composition layer is equal to a composition of the third semiconductor layer at an interface with the third semiconductor layer" of the amended claim 1 of the present invention.

However, upon a closer study of the cited reference, as shown in Fig. 4 and described in column 7, lines 30-31, Fujii teaches that the x parameter in time general formula $Al_xGa_{1-x}As$ of the grade composition layer 46 changes from 0.3 to 0.18, and the composition of the grade composition layer at the interface with the active layer 48, which has the composition of GaAs (hence x=0), is $Al_{0.18}Ga_{0.62}As$ (hence x = 0.18). Therefore, the composition of the graded composition layer at the interface with the active layer 48 is $Al_{0.18}Ga_{0.82}As$ and is <u>different</u> from

the composition GaAs of the active layer 48. Unlike Fujii, amended claim 1 of the present invention recites that the composition of the grade composition layer is equal to a composition of the third semiconductor layer at an interface with the third semiconductor layer, and to a composition of the active layer at an interface with the active layer

For the foregoing reason, Fujii fails to teach or suggest the feature wherein the composition of the grade composition layer is equal to a composition of the third semiconductor layer at an interface with the third semiconductor layer, and to a composition of the active layer at an interface with the active layer recited in amended claim 1.

The requirements for establish a *prima facie* case of obviousness, as detailed in MPEP § 2143 - 2143.03 (pages 2100-122 - 2100-136), are: first, there must be some suggestion or motivation, either in the reference themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference to combine the teachings; second, there must be a reasonable expectation of success; and, finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. As AAPA fails to teach a grade composition layer and as Fujii also fails to teach, disclose, or suggest the grade composition layer is equal to a composition of the third semiconductor layer at an interface with the third semiconductor layer, and to a composition of the active layer at an interface with the active layer recited in amended claim 1, their combination would be improper.

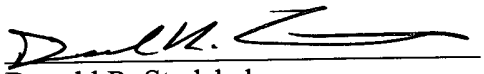
In view of the foregoing amendment and arguments, Applicants respectfully request reconsideration and withdrawal of all of the pending objections and claim rejection.

New claims 12-22 have been added to further complete the scope to which Applicants are entitled. New claims 12 and 13 are supported by page 19, lines 19-20; new claim 14 is supported by page 20, lines 5-9; new claim 15 is supported by page 20, lines 19-21; new claim 16 is supported by page 22, lines 1-6; new claim 17 is supported by page 22, lines 9-11; new claim 18 is supported by page 24, line 5; new claims 19 and 20 are supported by page 24, lines 20-22; and, new claims 21 and 22 are supported by page 26, lines 4-8 of the present specification.

CONCLUSION

Having responded to the rejection set forth in the outstanding non-Final Office Action, it is submitted that claims 1 and 12-22 are now in condition for allowance. An early and favorable Notice of Allowance is respectfully solicited. In the event that the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, the Examiner is courteously requested to contact Applicants' undersigned representative.

Respectfully submitted,



Donald R. Studebaker
Registration No. 32,815

NIXON PEABODY LLP
8180 Greensboro Drive, Suite 800
McLean, Virginia 22102
(703) 770-9300

MARKED-UP COPY OF AMENDED SPECIFICATION:

Page 7

Please replace the second full paragraph with the following:

To attain the foregoing object, a first semiconductor light-emitting device according to the present invention comprises: first and second semiconductor layers each of a first conductivity type; a third semiconductor layer of a second conductivity type provided between the first and second semiconductor layers; an active layer provided between the second and third semiconductor, the active layer emitting light with charge injected therein from the second and third semiconductor layers; and a graded composition layer provided between the active layer and the third semiconductor layer to have a varying composition which is [nearly] equal to a composition of the active layer at an interface with the active layer and to a composition of the third semiconductor layer at an interface with the third semiconductor layer.

Page 19

Please replace the second full paragraph with the following:

The first embodiment features the graded composition layer 104 provided between the base layer 103 and the active layer 105 to have a composition which is [nearly] equal to the composition of the base layer 103 at the interface with the base layer 103 and to the composition of the active layer 105 at the interface with the active layer 105. If the film thickness of the graded composition layer 104 is about 5 nm to about 100 nm, the occurrence of an interface barrier can be suppressed. The composition of the graded composition layer 104 may be varied continuously or stepwise. Since light is emitted from the region of the graded composition layer 104 closer to the active layer 105, it is also possible to regard the region as a part of the active layer 105.

Page 22

Please replace the third full paragraph with the following:

As shown in FIG. 2, the graded composition layer 104 is provided between the active layer 105 and the base layer 103 to have a gradually varying composition which is [nearly] equal to the composition of the active layer 105 at the interface with the active layer 105 and to the composition of the base layer 103 at the interface with the base layer 103. As a consequence, the

interface barrier between the active layer 105 and the base layer 103 is reduced greatly compared with the semiconductor light-emitting device according to the conventional embodiment shown in FIG. 17. Even with a relatively low reverse voltage, therefore, the holes reaching the interface between the active layer 105 and the graded composition layer 104 swiftly move to the collector layer 103 so that the concentration of holes in the region of the active layer 105 closer to the base layer 103 is reduced significantly. As a result, the quantity of holes accumulated in the whole active layer 105 is also reduced, which achieves a significant reduction in the amount of residual light emitted from the semiconductor light-emitting device during the extinction period.

MARKED-UP COPY OF AMENDED CLAIMS:

1. (Amended) A semiconductor light-emitting device comprising:

first and second semiconductor layers each of a first conductivity type;

a third semiconductor layer of a second conductivity type provided between the first and second semiconductor layers;

an active layer provided between the second and third semiconductor layers, the active layer emitting light with charge injected therein from the second and third semiconductor layers; and

a grade composition layer provided between the active layer and the third semiconductor layer to have a varying composition [which is nearly equal to a composition of the active layer at an interface with the active layer and to a composition of the third semiconductor layer at an interface with the third semiconductor layer],

wherein the composition of the grade composition layer is equal to a composition of the third semiconductor layer at an interface with the third semiconductor layer, and to a composition of the active layer at an interface with the active layer.